IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claim 1 (Currently Amended): A pattern inspection apparatus which performs die-to-die inspection of comparing detected pattern data of one area with detected pattern data of another area among a plurality of repeated pattern areas, comprising:

first imaging optics which forms first optical image of a pattern formed on an inspection target plate on the basis of design pattern data;

a detected pattern data generator which detects the first optical image and generates first detected pattern data;

second imaging optics which forms second optical image of the pattern, the second imaging optics serving to scan an entire region of the pattern on the inspection target plate with an optical magnification lower than that of the first imaging optics;

a low-resolution image data generator which generates second detected pattern data corresponding to the entire region of the pattern on the inspection target plate by using the second optical image;

a repeated pattern area detector which detects whether candidates for the plurality of repeated pattern areas [[from]]exist in the second detected pattern data by performing rough search of the second detected pattern data, and which measures area sizes of the candidates if the candidates exist; and

a comparator which sequentially compares the first detected pattern data corresponding to the plurality of repeated pattern areas detected by the repeated pattern area detector in accordance with die-to-die comparison.

Claim 2 (Original): An apparatus according to claim 1, wherein the repeated pattern area detector detects the plurality of repeated pattern areas by pattern matching on the basis of a similarity in a pattern layout of the second detected pattern data.

Claim 3 (Original): An apparatus according to claim 2, wherein the similarity in the pattern includes a pitch and size of the plurality of repeated pattern areas.

Claim 4 (Original): An apparatus according to claim 1, wherein the repeated pattern area detector further performs detection of the plurality of repeated pattern areas on the basis of the design pattern data.

Claim 5 (Currently Amended): An apparatus according to claim 1, wherein the repeated pattern area detector ~~detects whether candidates for the plurality of repeated pattern areas exist in the second detected pattern data, measures area sizes of the candidates with a first optical magnification lower than an optical magnification of the first imaging optics if the candidates exist,~~ re-acquires image data of the pattern with a second optical magnification higher than [[the]]that of a first optical magnification with which the sizes of the candidates are measured, within the detected area sizes, judges a coincidence degree of the candidates on the basis of the re-acquired image data, and registers the candidates, when judged to coincide, as the plurality of repeated pattern areas.

Claim 6 (Original): An apparatus according to claim 5, wherein the second imaging optics has at least two optical magnifications which are to be switched, and the repeated

pattern area detector re-acquires the image data of the pattern by switching the optical

magnification of the second imaging optics to the second optical magnification, which is

higher than the first optical magnification.

Claim 7 (Original): An apparatus according to claim 5, wherein the repeated pattern

area detector re-acquires the image data of the pattern by using the first imaging optics.

Claim 8 (Original): An apparatus according to claim 1, wherein the repeated pattern

area detector sets the plurality of repeated pattern areas to be detected to those having

rectangular shapes.

Claim 9 (Original): An apparatus according to claim 8, wherein the repeated pattern

area detector sets the plurality of repeated pattern areas to those having a size not smaller than

1 mm square.

Claim 10 (Original): An apparatus according to claim 1, wherein the repeated pattern

area detector detects a size or number of the repeated pattern areas input in advance before

detection operation, and thereafter starts the detection operation.

Claim 11 (Currently Amended): A pattern inspection apparatus which performs

die-to-die inspection of comparing detected pattern data of one area with detected pattern

data of another area among a plurality of repeated pattern areas, and die-to-database

inspection of comparing the detected pattern data with reference pattern data obtained from

design pattern data, comprising:

first imaging optics which form a first optical image of a pattern formed on an inspection target plate on the basis of the design pattern data;

a detected pattern data generator which detects the optical image and generates the detected pattern data;

a repeated pattern area detector which generates image data of an entire region of the pattern from the design pattern data with a pixel size corresponding to a first optical magnification lower than an optical magnification of the first imaging optics, and detects whether candidates for the plurality of repeated pattern areas [[from]]exist in the [[image]]design pattern data by performing rough search of the second detected pattern data, and which measures area sizes of the candidates if the candidates exist; and

a comparator which sequentially compares a plurality of detected pattern areas on the second detected pattern data corresponding to the plurality of repeated pattern areas detected by the repeated pattern area detector in accordance with die-to-die comparison.

Claim 12 (Currently Amended): An apparatus according to claim 11, wherein the repeated pattern area detector detects whether candidates for the plurality of repeated pattern areas exist in the design pattern data, measures area sizes of the candidates with a first optical magnification lower than an optical magnification of the first imaging optics if the candidates exist, re-acquires image data of the pattern with a second optical magnification higher than [[the]]that of the first optical magnification with which the sizes of the candidates are measured, or with a pixel size corresponding to the second optical magnification within the detected area sizes, judges a coincidence degree of the candidates on the basis of the re-acquired image data, and registers the candidates, when judged to coincide, as the plurality of repeated pattern areas.

Claim 13 (Original): An apparatus according to claim 12, wherein the repeated pattern area detector re-acquires the image data from the design pattern data with the pixel size corresponding to the second optical magnification.

Claim 14 (Original): An apparatus according to claim 12, wherein

the apparatus further comprises a second imaging optics which forms a second optical image of the pattern, the second imaging optics having the second optical magnification higher than the first optical magnification, and

the repeated pattern area detector re-acquires the image data from the second optical image.

Claim 15 (Original): An apparatus according to claim 12, wherein the repeated pattern area detector re-acquires the image data from the first optical image of the first imaging optics.

Claim 16 (Original): An apparatus according to claim 11, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to be detected to those having rectangular shapes.

Claim 17 (Original): An apparatus according to claim 16, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to those having a size not smaller than 1 mm square.

Claim 18 (Original): An apparatus according to claim 11, wherein the repeated pattern area detector detects a size or number of the repeated pattern areas input in advance before detection operation, and thereafter starts the detection operation.

Claim 19 (Currently Amended): A pattern inspection apparatus which performs die-to-die inspection of comparing detected pattern data of one area with detected pattern data of another area among a plurality of repeated pattern areas, and die-to-database inspection of comparing the detected pattern data with reference pattern data obtained from design pattern data, comprising:

imaging optics which form an optical image of a pattern formed on an inspection target plate on the basis of the design pattern data;

a detected pattern data generator which detects the optical image and generates the detected pattern data;

a repeated pattern area detector which analyzes layout information of the design pattern data as to whether patterns from the same file exist and detects the plurality of repeated pattern areas from the design pattern data; and

a comparator which sequentially compares a plurality of detected pattern areas on the second detected pattern data corresponding to the plurality of repeated pattern areas detected by the repeated pattern area detector in accordance with die-to-die comparison.

Claim 20 (Original): An apparatus according to claim 19, wherein the repeated pattern area detector sets the plurality of repeated pattern areas to be detected to those having rectangular shapes.

Claim 21 (Original): An apparatus according to claim 19, wherein the repeated

pattern area detector sets the plurality of repeated pattern areas to those having a size not

smaller than 1 mm square.

Claim 22 (Original): An apparatus according to claim 19, wherein the repeated

pattern area detector detects a size or number of the repeated pattern areas input in advance

before detection operation, and thereafter starts the detection operation.